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AN EXAMINATION

Into the Conditions on the

Lethbridge Northern Irrigation District

ALBERTA, CANADA

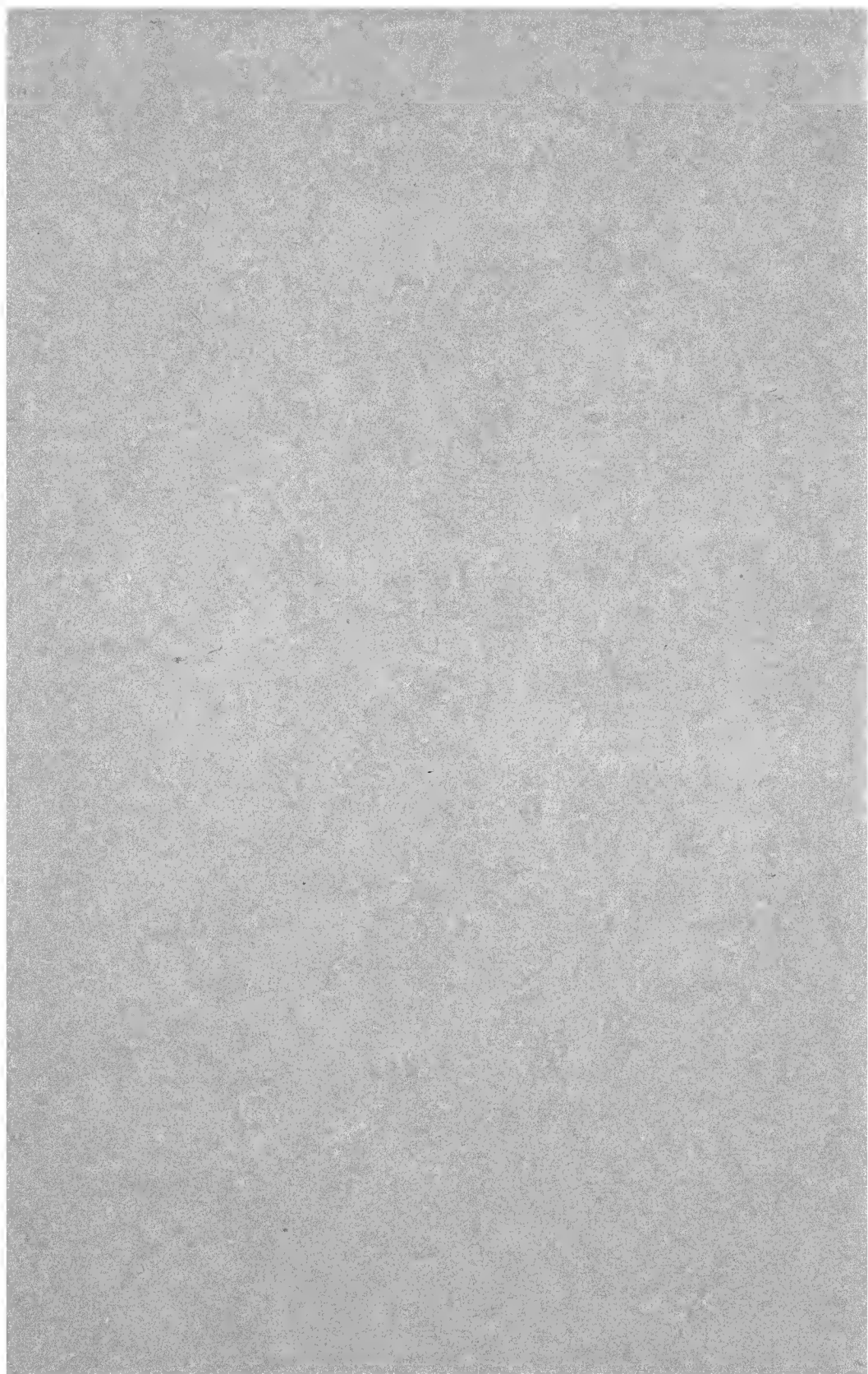


*A Report Submitted to the Premier of Alberta
February 1925*

BY

JOHN A. WIDTSOE

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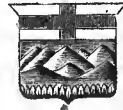
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SALT LAKE CITY, UTAH,

MARCH 2, 1925.

TO THE HONORABLE MR. H. GREENFIELD,
Premier of Alberta,
EDMONTON.

MY DEAR SIR:

The Lethbridge Northern is an irrigation project of great possibilities. It includes 100,000 acres of irrigable and 131,000 acres of dry lands. The soils of the project are fertile; the water supply is ample, and the climate is suitable for the production of a great variety of standard crops. The headworks, canals and laterals of the project appear to be well built, and were constructed within the original estimates. Municipal and other taxes are low. The landowners were almost unanimous in requesting and authorizing the formation of the District and the construction, under existing terms, of the irrigation system. The project compares favorably in acre cost and physical environment with many existing successful irrigation ventures in the United States. It is capable of supporting at least one thousand families, or a population of five thousand souls. When the project is fully under way, that is, when all of its acreage is irrigated and farmed wisely, the annual crop income will exceed the cost of constructing the irrigation works. In addition, the needs and business of the project families will increase the population and business of Lethbridge, Macleod and other neighboring cities, towns and villages. The Lethbridge Northern should become an asset of high value to Southern Alberta. It is clear that from its inception to the present the project and the settlers have had the sympathetic support of the Provincial Government and its agents, and of the representatives of the Dominion Government.

Water for irrigation has been available only one year—in 1924. During that year, only one-fifth of the total irrigable area was under cultivation by irrigation. Therefore, the project is only beginning its activity as an irrigation venture; and the economic results of the last season are only slightly indicative of the larger possibilities later to be achieved.

Meanwhile, the first years in the history of an irrigation project are critical. A false start usually leads to a poor ending. The only foundation upon which an irrigation project may be built safely and with assured success, is a project policy, which from the beginning conforms to the existing conditions and needs of the water users as individuals and the project as a whole. The plan under which the Lethbridge Northern now operates is not adapted to the conditions surrounding the project.

In fact, the situation on the project is such as to invite failure. Changes must be made quickly and firmly if this valuable asset of the Province shall be saved from disaster.

Competition With Dry Farming

Southern Alberta is semi-arid; but about one-half of the annual precipitation upon this part of the Province falls during the growing season and therefore is effective in crop production. This makes dry-farming, when properly practised, a profitable pursuit. Historically, the period of dry-farming followed the period of ranching; and, at present, most of the farmers are accustomed to life under dry-farming conditions. Moreover, there are periods of heavy rainfall, with large acre yields and correspondingly great acre incomes from the dry-farms. These occasional bumper years linger in the memory and leave the hope of other bonanza years in which the farmer may make up for the leanness of the dry years. This state of mind is reflected in the fact that, in 1924, only 21,912 acres, or about one-fifth of the total irrigable acreage of the Lethbridge Northern were irrigated, while 17,064 acres of irrigable land were dry-farmed. This feeling will change only as the landowners become convinced that, under the financial terms proposed, irrigation farming is more profitable to them than dry-farming. It is useless to expect this project to succeed unless its irrigable lands are used completely for irrigation farming. The temptation to return to dry-farm methods, which presents itself to the irrigator as wet seasons come, is most dangerous to the welfare of the Lethbridge Northern, for it leads to uncertainty in the methods and plans of the farmer. This factor means some delay in the full subjugation of the project by irrigation and a consequent delay in securing full returns from the financial investment. The Provincial and Dominion agencies charged with the consideration of such matters and all other interested parties should undertake and continue a steady, wise campaign to encourage the landowners under the Lethbridge Northern to replace dry-farm with irrigation practices.

Advantages of Irrigation Farming

Irrigation has no quarrel with dry-farming. Both are indispensable for full land development under semi-arid conditions. However, under Lethbridge Northern conditions, all the evidence produced favors the establishment of irrigation. At the best, dry-farming in this district is precarious. The lean outnumber the fat years. Irrigation, on the other hand, will insure steady crop yields from year to year, except under most unusual conditions. This steadiness and certainty of production establishes irrigation farming as a sound and dependable

business practice and relieves the farmer of the hazard and discomfort that of necessity accompany agricultural operations, depending wholly upon the rainfall, in districts with the climatic environment of the Lethbridge Northern. Even when scientific methods of tillage diminish the danger of dry-farm failures, it must be borne in mind that a fundamental necessity in successful dry-farming is the summerfallow, which requires that from one-third to one-half of the land is always unproductive. Under irrigation, crop rotation takes the place of fallowing, and every acre of land is productive every year. This is an important consideration in comparing dry-farming with irrigation farming. In addition, and perhaps of first importance, is the undoubted fact that acre crop yields are much higher under irrigation than under dry-farming. On the Lethbridge Northern, it may be safely predicted on the basis of the experience of practical irrigation and experiment stations in Alberta and other countries, that as the farmers learn the methods of irrigation agriculture, the average acre crop yield will be at least twice that on the dry farms, and the income from the livestock accompaniment of irrigation farming will greatly augment the farmer's direct income from the land. The possibility of a home, set in an environment of trees, shrubs, flowers and kitchen gardens is not the least of the many advantages of irrigation on this irrigation project. Dense settlement is characteristic of irrigated areas. The greater opportunity for social life thus secured is another strong argument for irrigation, wherever it may be practised. Unquestionably, from every point of view, on the Lethbridge Northern, irrigation farming may become more profitable and satisfactory than dry-farming. As a hopeful sign that this is becoming understood is the fact that, of the irrigable lands in the project, more acres were irrigated than dry-farmed; and that, of the 131,220 acres of dry land, only 9,315 acres were farmed. Every available agency should be used to set before the project farmers the true advantages of irrigation farming. Certainly no relief, such as in hereinafter suggested, should be extended to irrigable lands that are uncultivated or dry-farmed unless the owner can show sufficient cause for such action.

A New Program of Agriculture

Crops of high acre value must be grown on the irrigated farms. The greater cost of water and the added labor of production make this indispensable. That is, the irrigation farmer must produce crops, capable of being manufactured and sold to sugar, butter or cheese factories; specialized crops such as fruit and garden truck, according to location and market demands, and crops that may be fed to livestock. An irrigated farm should in no case be devoted to one crop; it should always

be characterized by crop diversification and rotation. Crops that succeed well under dry-farming are seldom successful crops under irrigation, from the point of view of income.

Wheat is the standard crop in Southern Alberta, and on the Lethbridge Northern 15,841 acres of wheat, or more than 72 per cent. of the total irrigated area, were grown in 1924. The proportion of wheat must be reduced greatly before the project can achieve financial success. The place of wheat on irrigated farms is in a system of rotation. The reduction in the wheat acreage must be done slowly, and only as other crops are substituted. Under Alberta conditions, wheat will always have an important place on the irrigated farm.

Sugar beets which do well on the Lethbridge Northern, would be an excellent crop around which to build a project system of agriculture. Every endeavor should be made to encourage the growing of sugar beets, so that the building of a project sugar factory might be justified. However, each farmer should grow only a small acreage of beets, from five to twenty acres, depending upon the help available to him. Large acreages in sugar beets imply the possession of large capital and an abundance of hired help, together with managerial ability to direct the labor and to make the crop yield a return on the investment. The average farmer should content himself with a relatively small acreage of sugar beets, from which, however, he would secure a good cash return, and make possible a proper crop rotation for the benefit of all the other crops on the farm.

Alfalfa is a fundamental crop under irrigation, both because it yields well and fertilizes the soil and also because it furnishes food for livestock. Last year only 414 acres of old and 268 acres of new alfalfa, or less than three-fourths of one per cent., were grown on the project,—an acreage wholly insufficient for the proper development of the project. In the matter of alfalfa, also, the increase while steady, should be gradual; but ultimately a large proportion of the acreage of the Lethbridge Northern must be producing alfalfa.

The future of the Lethbridge Northern is measurably dependent upon the degree to which cattle, sheep, hogs and poultry are fed upon the farms. The census of 1924 shows 3,750 horses, 2,621 cattle and 1,986 swine on the project. This is far below the numbers necessary for the success of the project. It would be a wise plan for the irrigation farmer to begin with a few head of livestock to care for them well, to retain the increase in breeding stock, and gradually to build up the livestock division of his farm until most of the forage crops produced are consumed on the farm. It is unwise for any length of time to ship alfalfa or other cattle feeds from the farm; they bring a

higher return when sold as meat, milk or butter fat, and at the same time the fertility of the farm is maintained or increased.

Dairying, indeed, should be fostered, for it is often the key to success in irrigation farming. Only 18 Lethbridge Northern farmers are at present shipping cream, whereas every farmer on the project should share in the advantage that comes from the production and sale of milk or cream.

A modern program of agriculture, especially planned for the Lethbridge Northern, should be outlined by the closest students of the subject. The progressive adoption of such a new and scientific program of agriculture is essential for the success of the Lethbridge Northern. This task might well be placed in the hands of Director W. H. Fairfield, of the Dominion Experimental Station at Lethbridge, whose excellent researches into the subject and familiarity with existing conditions have fitted him eminently for the work. The project farmers must earnestly set to work to put such a proposed program into execution. The obligations of the farmer, including the payment for land and water, must be paid from the products of the land. The land must pay and repay; it can do so only with an agricultural practice conforming to a carefully planned program. Wide publicity must be given to the program adopted and to its advantages.

Marketing Facilities

Any program of agriculture for the Lethbridge Northern must consider the problem of marketing. The project does not lie near large centers. The tariff wall makes the United States a difficult market. Therefore the products of the farms must be disposed of to the limited markets in the proximity of farms or to the larger markets at great distances. As the project becomes more completely settled, there will develop an increased home market which will always be profitable. Any agricultural manufacturing plants that may be established will greatly increase the home markets. However, the far away larger markets will always be of major importance in the disposition of farm products. It should be the business of the State and interested business organizations to help the farmer find the best markets for his products. Co-operative marketing properly planned and carried out saves the farmer much worry and loss. The marketing problem on the Lethbridge Northern is of such a nature that steps should be taken at once to enable the most profitable sale of the crops raised in accordance with the proposed agricultural program. The Government could well take the initiative in promoting such assistance.

The Proper Use of Water

Irrigation water must be used correctly or it may become a source of loss. A proper program of use of water is second in importance only to a correct program of agriculture. If insufficient or excessive quantities are used, or if the applications are made at improper periods in the life history of the plant, the crop yield may be reduced.

The climatic conditions of the Lethbridge Northern are such that fall irrigation may be practised with great profit. The water stored in the soil from fall until springtime will give the young plants an excellent start in spring and will increase the final harvest. The relatively heavy summer precipitation will also tend to reduce the number of necessary irrigations.

Much depends on the accuracy with which the system of farm ditches is laid out. Level lands are the easiest of irrigation. Therefore, uneven or rolling lands need to be leveled before the farm ditches are dug. This may entail a high expense. It is very fortunate that in the classification of the lands to come under the canals of the Lethbridge Northern, all lands were excluded, the leveling of which would cost more than \$8.00 per acre. The project irrigable lands are mainly of a character to require very little leveling.

The main works and canals are so constructed as to furnish a depth of water equal to 18 inches per season over the 100,000 acres embraced in the project. Under the prevailing climatic conditions, this should be sufficient to mature crops. Since, however, several years will elapse before the whole tract will be under cultivation by irrigation, more than the allotted quantity of water will be available for some time to come. There will be a temptation to use more water than really is needed by crops. Such a practice may seriously endanger the future of the project. An excellent and exhaustive soil study has been made by Drs. Wyatt and Newton, of the University of Alberta, of the area embracing the Lethbridge Northern. The soils were found to be of high fertility, and well adapted to irrigation. Sub-surface conditions are such, however, in common with practically all irrigation projects, as to cause seepage and possibly alkali if over-irrigation is permitted. The district should take steps to guard against this contingency. The canals and laterals should be examined to discover leaky sections. The cost of drainage is high and can not well for many years be borne by the project.

The management of the project should distribute water not only in accordance with the fundamental contract with the farmers, but also with the needs of the crops and soils. There is ample water for the requirements of the project, and some to

spare. Therefore, the service of water might be so varied as to meet the necessities of the different sections of the project. For example, since wheat requires less water than alfalfa and sugar beets, lands bearing the long-season crops might well be served more liberally. Likewise, since sandy soils require more water for full crop production than do clayey soils, the sandier parts of the project should receive a larger allowance of water than the portions of heavier and more water-holding soils. All matters belonging to the program of water use should be carefully worked out for the satisfactory development of the project.

Technical Aid To Farmers

Dry-farming and irrigation farming are two distinct types of agriculture and modes of living. Dry-farming is extensive and confined to one or few crops, which are sold directly from the farm; irrigation farming is intensive, diversified and feeds a large proportion of its variety of crops to livestock. The former may be said to be a producer of raw, the latter of manufactured materials. The former, dependant for water upon the natural precipitation, controls crop production only by tillage methods. The latter, with the irrigation stream at its service may exercise control by regulating the water supply and by the use of fitting methods of tillage. The difference is so thoroughgoing, that even those who are temperamentally inclined to the more intensive form of agriculture require some time to learn the new methods of work, and to accommodate themselves to the changed program of work. Those who are temperamentally unfitted for such work do not endure it long.

The farmer must be trained for irrigation farming. If he has had irrigation experience, his problem is mainly one of wise adaptation of his resources to local conditions. If he has had not previous irrigation experience, he will find that time and advice are needed to make him familiar with irrigation practice and farming. The wilfulness of water often seems insurmountable to the beginner in irrigation. Ample facilities for instructional help should be at the disposal of the beginners in irrigation on the Lethbridge Northern. Some agricultural extension help is already provided by the Dominion Government. More should be made available if needed. These extension workers should act as intimate advisors to the farmer. They should visit the farmer on his farm, and by direct demonstration make clear the methods of irrigation agriculture. Money could not be spent to better advantage, during the next few years, by those having the welfare of the Lethbridge Northern at heart, than to supply the farmers with such intimate advice and counsel. It need not be said that the men chosen for this purpose should themselves have experience in the field in which they are expected to give help.

Even the man who knows something about irrigation farming requires counsel in matters pertaining to the crops to plant, the probable markets, the methods of cultivating, handling and selling, and in many other matters of vital importance to the water user. A great asset in the development of the Lethbridge Northern is the Dominion Experimental Station at Lethbridge. This station which is devoting itself largely to the solution of problems important to this project, should be liberally supported, and means should be found to incorporate its findings into the practices of the farmers, by direct teachings and by demonstration, probably of a co-operative character.

Perhaps of major importance would be help to enable the farmer and his family to enjoy life, while developing their farm. Farmers are human beings. Contentment is necessary for their best efforts. The attitude of the farmer's wife and children towards the work in hand frequently determines the success that may be attained. The project advisor could be of great assistance in this phase of project development.

The Western Canada Irrigation Association could do much to keep up interest in the irrigation needs of the Province; including those of the Lethbridge Northern. The public press, serving the project, should continue its effective assistance by publishing approved advice on matters of agricultural importance. However it may be done, it is necessary for some time to come that provision be made for the technical help needed by the water users. The Lethbridge Northern is exceedingly fortunate in having a nucleus of farmers who have been on the project many years, whose interests are there, and who will co-operate to help make a success of the project. Another type of expert help is that of neighboring municipalities by their Boards of Trade or similar organizations.

The farmer should not be required to bear the burden of securing sugar factories, canneries and butter and cheese factories with which to make his operations more profitable. He is busy with his work of producing the materials to be manufactured. Adjoining municipalities and the Provincial and Federal Governments should lend a strong hand in interesting capital in this form of development for the project. Since the Lethbridge Northern has before it several years of pioneer effort, the help that business men might give farmers by personal visits, words of encouragement and sometimes by small financial help towards making a beginning in the dairy, hog, sheep or poultry business or in securing seed for new crops, might be the determining factor in winning happiness and success for the farmer.

Smaller Holdings Necessary

Irrigation farming implies a higher cash return but also a greater labor cost per acre. Under no condition can one man with his own labor cultivate as many acres under irrigation as under dry-farming. Intensive agriculture presupposes small holdings. In Southern Alberta large holdings are the rule. Men think in terms of quarter sections rather than of acres.

An irrigation farmer who undertakes to cultivate more land than he can handle with his own labor, and the help of his children and an occasional hired man in the busy seasons, is likely to lose by the venture. The extra land and water represent a large capital investment; he becomes dependent on hired help, not always available in these days, and unless he is an unusually good manager finds that his time is consumed in supervision.

On the Lethbridge Northern, under the conditions there existing, the ideal to be held in view should be a well cultivated, irrigated farm of 80 to 100 acres. Such a farm would support a family much better than larger farms cultivated by hired hands. This ideal can not be attained at once; the change from dry-farming to farming under irrigation of necessity must be gradual, but, even now, no person should undertake to farm more than 160 acres of irrigable land. It is interesting to note that the average holding cultivated in 1924, was 152 acres. A holding of 160 acres, 100 acres of which are irrigable and 60 acres of which are dry, might, under present conditions, be a better combination for the average farmer. Large holdings are a distinct evil, and jeopardize the success of the project.

The farmer may be tempted to hold on to more land than he can cultivate, in the hope of enjoying the increased values of the land when the project is more fully developed, or to have a farm large enough to divide among his children when they grow up. In either case, there is the implication that a part of the land is to pay the annual charges for the whole farm, which is very likely to be beyond the ability of the farm to accomplish.

Large holdings characterize the Lethbridge Northern. There are 226 owners, each holding 160 acres; and 108 of 320 acres each. These two classes total 71,720 acres. The owners of the remaining 28,280 acres hold from 480 acres to 2,560 acres each. Whether held in the idle hope of bringing them under cultivation or for speculative purposes, the larger holdings should be reduced to at least 160 acres each; unless indeed the owner has sufficient capital for large operations, and much available labor help.

This recommendation in turn means that someone must be found to take the excess holdings off the hands of the farmer. Under the circumstances surrounding the Lethbridge Northern, the Province being the guarantor of the district bonds, the Province itself will undoubtedly have to undertake this task. All excess irrigable lands of the project should be bought or held under option by the Province at a low fixed cost, not to exceed a few dollars per acre. Any form of relief that may be authorized should be withheld from those who will not pay the annual charges and yet insist on retaining their large holdings. This matter is of the highest importance if success is to be won for the Lethbridge Northern.

If a farmer is successful in securing tenants for his surplus lands, in excess of his home place, each tract so cultivated should be designated as another home place, and not as a part of the farmer's home place.

The Difficulty of Non-Residents

Non-resident ownership of project lands is undesirable, because lands so owned are unlikely to pay the annual charges to the end of the contract. The ideal irrigation project is operated wholly by resident farmers.

About 53,000 acres or more than one-half of the irrigable lands of the Lethbridge Northern are owned by non-residents of these lands, about 22,500 acres are owned by the Crown, the Canadian Pacific Railway, the Hudson's Bay Company, the Cameron Ranch Company, and the British Columbia Trust Company.

Of the remaining 30,500 acres in non-resident ownership, about 17,000 are under the care of and partially operated by tenants. The abundance of land and opportunities in this country make tenancy of uncertain value because the man who is able to succeed as a tenant farmer can usually secure his own homestead, and does so. At the best, the tenant remains on the farm a few years. In any case the tenant on surplus lands of this project should be given an option to purchase the land at the nominal price agreed upon for the project. Only when this is done should the tenant be given the privilege of the home place. To make this project succeed, the non-resident owners must be required to pay the annual charge or to place the land in the hands of the Province or its properly authorized representative at a nominal price. These lands should be dealt with as has been suggested for holdings in excess of the ability of the farmer to cultivate. Naturally, as long as a non-resident owner pays the annual charges, he can not be molested; but those who are in arrears should be required to cultivate their lands and pay

the charges or to assign the lands to the Province. Whenever such lands are cultivated by tenants, each tract so cultivated should be considered as a farmer's home place, with the privileges attendant upon home place efforts.

Colonization of The Project

The plan under which the Lethbridge Northern irrigation district was formed assumed that from the beginning of the annual interest and repayment period, every acre of the project would pay its proportionate part of the charges. This implied that from the beginning every acre would be under cultivation and in a productive state.

In 1924, the first year of operation, only one-fifth of the project was cropped under irrigation. If the 219 resident owners and the 38 tenants, who farmed the project in 1924, had each cultivated 160 acres, the total area cultivated would have been 41,120 acres, or less than one-half of the project. If every resident and non-resident (143) owner and every tenant had each cultivated 160 acres, the total area under cultivation would have been 64,000 acres or less than two-thirds of the project area.

The Lethbridge Northern needs now more than twice its present population—or from 300 to 500 more farmers to insure the repayment of the cost of construction. It can sustain in comfort 650 to 700 more farmers, with their families. A project population of 5,000 souls need not be an excessive objective of the project. It must have twice as many farmers, as it now has owners, to avoid failure.

The problem of colonization is second in importance only to that of making the farmers already on the project able to make a living and to pay the annual project charges. The longer the full settlement is delayed the larger will be the loss to those responsible for the project obligations. Besides, every farmer on the project will benefit from the closer settlement and greater activity of complete colonization, as will also all the adjoining communities.

This matter of colonization would seem to be of more than local or Provincial concern. The full and proper development of semi-arid Canada can not be accomplished without the establishment of irrigated areas in the sections of low or irregular rainfall which have access to flowing or artesian water. The whole Dominion will be benefited by the formation of irrigated centres, of dense population and intensive effort, in the drier parts of the country, around which dry-farming and range stock raising will prosper and by which the whole country will be knitted together. It will help make Canada one country under

continuous human conquest from ocean to ocean. The Lethbridge Northern is a typical irrigation project of the better kind, in cost and opportunity for the farmer. Its success will point the way to other similar enterprises. Its failure will have a deterrent effect upon future efforts in land development under irrigation. Therefore, the colonization problem of the Lethbridge Northern has National as well as Provincial importance and should be attacked by local, corporate, Provincial and Federal agencies already organized for colonization purposes. If the municipalities near the project, the Canadian Pacific Railroad, the Province and Federal Government would use their existing agencies in co-operation with the representatives of the project for this purpose, the settlement of the Lethbridge Northern should be accomplished quickly.

Settlers for the Lethbridge Northern should be chosen with good judgment. They must be hardworking, thrifty and willing to wait a few years for the full reward of their labors. Their origin, nationality or their financial conditions is of less importance than their willingness to sacrifice for some years to win a financial independence on the land. The man who comes in to remain only until he can sell out at a margin of profit is a hindrance to the project. The settlers who will do best on the project are those, undoubtedly, to whom the opportunities of the project mean a distinct rise in their fortunes, to whom this new land is one of great promise. This points to the older, especially the northern, countries of Europe, and to the congested centres of this country.

An even more desirable type of settler is the Canadian dry-farmer or rancher who is seeking a more desirable location. Such settlers know life under Canadian skies; they have learned an appreciation of a regular supply of water in agriculture; they are usually supplied with teams and farm implements, and can make a fairly good estimate of the value of an agricultural proposition presented to them. The records indicate that from among this class the Lethbridge Northern might find more than enough men of good promise, to settle the project. This class should probably be looked into at the earliest possibility in the interest of early success on the Lethbridge Northern.

The most desirable settler is naturally the man of experience, with considerable capital, who can undertake the business of farming on a full scale at once. Such men may be found occasionally in this country or in the United States but they are not numerous. At present the irrigation projects of the United States are offering excellent inducements to settlers. Such men are of particular value to a project because through their leadership they develop a following among the water users, which gradually adopts the more profitable methods

of the leader. A score of such experienced leaders scattered over the Lethbridge Northern would contribute greatly to the prosperity of the project.

Ordinarily, young or middle-aged men with families are most desirable. Unmarried men, if brought on the project, could be trained for the work by serving a year or two as farm hands on the farms already in operation; and then given an opportunity to secure their own parcels of land. There may be young men on the dry-farms and ranches of the Western Provinces who are looking for such a chance for independence as is offered by the Lethbridge Northern. Usually a new settler should not cultivate all of his land the first year, but should grow into the use of his full tract. Thus he needs less capital and is more protected from losses.

As the settlement of the project progresses, it would be well, if possible, to follow the methods of community settlement. Each community should centre upon some railroad station. Expansion should proceed from such centres.

The future of the Lethbridge Northern hinges largely upon success in colonization. In this matter, "he gives twice, who gives quickly." The day of temporizing is gone.

Credit For The Farmer

The new colonist seldom has sufficient capital with which to begin farming operations. Many otherwise desirable prospective settlers may be possessed of little or no capital, and will need some financing if brought upon the project. The whole question of farmers' credits is a difficult one. Financial help is indispensable for full project success. Whenever given, however, it should be given in moderation; the farmer should match something against the money advanced, in money or labor; and the expenditure of the money should be supervised carefully. The methods employed and recommended by Dr. Elwood Mead might with advantage be applied in a modified form to the Lethbridge Northern.

The Settler and Land Prices

The individual owner on the Lethbridge Northern to succeed must reduce his acreage to an area which he is able to cultivate well and profitably. The project to succeed must bring all of its lands under cultivation, which can be done only by securing a full settlement of the tract.

With the exception of 4,834 acres belonging to the Crown, the lands of the Lethbridge Northern are in private ownership. The price at which these lands are offered to the prospective settler may become the determining factor in colonizing the project.

The cost of the irrigation works, which provide the farmer with a water right, not counting accumulated interest now amounts to something more than \$55.00 per acre. It is recommended, later in this report, that the price to present and prospective settlers do not exceed this figure. This acre value, with interest, under prevailing and probable future project conditions, represents its full market value. The additional cost of land must be kept very low indeed, if total acre cost is to be attractive to prospective settlers, or if actual water users shall be able to make repayment, even under smaller rates than those now prevailing.

Meanwhile there can be little doubt that many of the owners of lands on the Lethbridge Northern have paid fairly high prices for their lands during flush times, and that others have held the lands for some time expecting to realize on the unearned increment. These persons naturally desire to sell their lands at a price sufficient to cover their costs or hopes.

At the same time, on many of the lands are obligations to banks and other financial institutions. These contracts were entered into in good faith, and both parties desire that the obligations be paid.

The colonizing agency that may be established by the Government for the Lethbridge Northern, will be unable to accomplish its work unless it can offer lands on the project at a nominal price plus the cost of water right. It is unavoidable therefore, if success is to be won for the project, that owners and bankers jointly take their losses on the lands to be sold, so that the remaining holdings may be better able to repay their obligations, and that a more general prosperity be won for the project and all interests associated with it.

The hearing at Lethbridge, private conversations with land-owners, and the production records, make it clear that a nominal intrinsic value in fact attaches to the dry land under the project. There may be exceptions according to locality; though differences are chiefly due to perfected methods of tillage.

All who are interested in the problem should come to an amicable understanding with respect to this difficult matter. Such an agreement would be far preferable to suits at law to dispossess the land owners who have failed to pay their water charges. In fact in most cases it would be a real kindness to a farmer to compel him to farm only as much land as his power permits him to farm well.

Lands not cultivated, and in arrears, should be assigned to the selling agency; the measures of relief herein proposed should be applied only to lands, the owners of which are in good faith attempting to bring their lands under proper cultivation. If necessary, action should be taken under the Irrigation

Districts Act to compel such release of lands as is necessary to win success for the project.

Of importance, also, to present and prospective settlers is a protection against pyramiding the acre costs under the provision for joint liability. The project is in such a pioneer condition, that assurance should be given every settler that he will not be liable for more than \$55.00 for his water right per acre, with the interest as agreed upon. The Province must take the responsibility of disposing of contracts that fail, if the settlement of the project is to be effected expeditiously.

A provision should also be made under which any water user who so desires may pay up the full acre costs at any time and receive clear title to the land when he does so.

The Present Settlers

Any success that may attend the future operations of the Lethbridge Northern will in large measure depend on the attitude of the settlers already on the project. Means of relief will be ineffective unless used in the right spirit by those who operate the farms. The Government may find a way to success, but that way must be trodden by the farmer.

The conference with the water users of the project, held at Lethbridge, developed into a full and free statement and discussion of the problems of the project from the point of view of the farmers. At no time during the sessions of the conference, did any speaker voice a lack of confidence in the project. A splendid determination to co-operate in all reasonable attempts to improve conditions on the project and to make the project succeed, was evident throughout the discussion; wisdom, not violence, characterized the propositions made for project betterment. The fine spirit of understanding, intelligent faith and good will which permeated the conference should do much to bring prosperity to the Lethbridge Northern.

The settlers already on the project are the best colonists. To those people, acquainted with the project, who have toiled for many years on the project lands to win a subsistence, such measures of relief as may be authorized should be tendered freely in accordance with their needs.

The conference made it clear that in the main the settlers have had great difficulties to overcome; it was equally clear that the situation is far from hopeless. Out of the discussion came many suggestions. Among them, the following were outstanding:

1. Most of the present difficulties are the result of conditions existing in the dry-farm days of the district, and have only been emphasized by the required payments for water right and water service.

2. The land holdings must be reduced to tracts within the ability of the farmer to cultivate under irrigation.
3. A more profitable program of agriculture must be adopted.
4. Renters must not be in danger of having their goods and chattels seized for unpaid back charges for water right or water service.
5. Provision must be made by which the man who pays out his water right may receive clear title irrespective of the degree to which other farmers have made payments on their water rights.
6. The annual charge for water right and water service must be made much smaller than at present, even if such readjustment means that the period of repayment must be lengthened out considerably.

It seems that the Government in its endeavors to promote the interest of the project may safely count on the co-operation of the present farmers of the Lethbridge Northern.

Financial Condition of The Farmers

Stripped to the bone, the problem of every irrigation project may be stated in the question, "Is the income from the land sufficient to pay the obligations of the farmer?" When this question can be answered affirmatively, the project is a going concern. When answered negatively, the annual income must be increased or the annual charge diminished. The farmers on the Lethbridge Northern have agreed to pay for the water right at the rate of \$54.00 per acre, with interest at 6 per cent. until paid. The unforeseen break in the canal in 1923, and other transactions, wholly legitimate, have increased the capital cost. If rates were levied and collected in accordance with original plans, and with 100,000 acres irrigable, the annual levy per irrigable acre for the life of the debentures would be approximately:

1925-1928—

Interest on debentures and payment on short-time debentures	\$3.70
Operation and maintenance	1.75
Total	\$5.45

1929-1951—

Interest on debentures and sinking fund payments.....	\$4.70
Operations and maintenance	1.75
Total	\$6.45

The above estimates for operation and maintenance are being reduced by the good management of Mr. P. M. Sauder and his staff, to about \$1.25 per acre, and should be kept there or lower.

For the year 1924, therefore, the farmer should pay per acre, \$3.70 on the cost of the water right, and \$1.25 for water service, or \$4.95 per acre. Taxes on the project average about 25 cents per acre. According to the very helpful economic survey of the project conducted by Mr. James Colley and colleagues, other obligations of the farmer average about \$11.00 per acre, or about 75c per acre for interest. These items constitute a somewhat fixed acre charge of \$5.95. To this must be added the cost of producing the crop, in addition to his own labor; the maintenance of the farmer and his family with food, clothing, education and the other necessities and comforts of life.

The average gross acre income on the irrigated lands of the Lethbridge Northern in 1924 was \$16.19; on the dry-farmed lands, \$8.09. With such an income the farmer could not meet his fixed and current expenses and his cost of production. It is quite useless to hope that the farmers on the Lethbridge Northern can pay the present rates with the present acre income—especially as four-fifths of the irrigable land are not irrigated. The fact that some farmers produced more than the average income is offset by the farmers who produced less.

However, as the program of agriculture becomes more diversified and intensive, the acre income, even under the climatic and economic conditions of 1924, would undoubtedly increase to \$25.00 or more per acre. The obligations of the farmer could then be more nearly paid. Thus the importance of a program of agriculture adapted to the irrigated lands of the Lethbridge Northern is again brought out.

Agricultural conditions are certain to improve gradually and steadily. Nevertheless, a policy for the future development of the Lethbridge Northern must not be built on the good years to come. It is an axiom in the practice of dry-farming that continued and ample success comes to him only who farms every year as if the next year were to be a dry year. It should be as axiomatic in the field of irrigation, that to insure success for an irrigation project it should be so organized as to meet successfully the year of smallest crops and lowest prices.

Methods of Financial Relief

Relief is needed by the water users on the project. It must be given to those who actually operate home places on the project. Lands not used for crop production, whether

owned by residents or non-residents, unless ample cause can be shown for the condition, should be given no relief from existing terms.

The acre cost of irrigated lands is of great importance to the farmer; but of more immediate concern is the annual rate of repayment. Agriculture seldom provides large margins. A farmer can more easily buy expensive land with an easy method of repayment than cheap land requiring annual payments in excess of the productive power of his land.

This is of particular importance during the first few years, when everything is to be made ready for productive operation. The farmers of the Lethbridge Northern must change in methods and aims from dry-farming to irrigation. This will be accomplished slowly. During the transition period the farmer may find it difficult to make any payment whatever toward the cost of construction. Therefore, during the year 1925, and, if really necessary, in 1926, the farmers who actually irrigate their land should not be required to make payments on construction, if proper application is made, and investigation under the authority of a properly authorized Board shows that the farmer has need of such relief. Blanket relief should always be avoided. The interest loss resulting from such action should be borne by the province. The full capital cost should be fixed definitely at \$55.00 per acre. The repayment of this acre charge should begin from January 1, 1926, or from the date to which such former relief has been extended, with interest from the same date. The water service charge for 1924 and succeeding years should be collected, except upon the showing of dire need. Those who make construction payments for 1924 or any of the years of the moratorium should be so credited with such payments as that they may pay out more quickly than those who delay their payments.

New settlers on the project should be given a similar freedom from charges during the first and second, and perhaps the third, years of operation, as each case may warrant; and the capital acre cost should not exceed \$55.00.

When payments on the construction cost and on the interest on debentures begin, the present methods should be so arranged that a definite sum should be required per acre from the beginning to the end of contract. If thought well, one annual charge might be made during the first ten years of the operation of a farm; and a somewhat higher annual charge during the remaining period, when the farm has increased its annual productivity by a more complete adjustment to irrigated conditions.

Any methods of repayment should make it possible for the farmer, who so desires, to pay out earlier than at the end

of the repayment contract. If this be done, it practically means the suspension of the joint liability clause for the Lethbridge Northern. The relatively high capital cost, and the pioneer status of the project, make it seem almost imperative that this feature be added to any new plan of repayment. Colonization should become more rapid and satisfactory if this be done. Joint liability, under existing conditions, is not, as a principle, helpful in overcoming the difficulties of this project.

The state of irrigation advancement on the Lethbridge Northern together with market and other controlling conditions make it very doubtful if, after a moratorium of two or three years, the farmers can pay more than \$2.00 per acre annually on the water right charge for the first ten years, and \$1.00 or less annually on the water service charge, or a total of \$3.00 per acre. After the ten year period the annual charge for construction could be made \$3.00 to \$4.00 per acre, as conditions warrant, with \$1.00 for water service. The present plan which provides for an annual acre charge, until 1928, of \$4.95 or more, and after 1928, of \$5.95 or more is certain to prove ineffective. As observed, the farmer's margin is normally small, and a difference in the fixed annual acre charge of \$2.00 may easily mean the difference between success and failure.

The recommendation that an annual construction charge of \$2.00 be made during the first ten years of the period of repayment is based upon a consideration of the conditions existing on the Lethbridge Northern, and a comparison with similar projects elsewhere. The acre yield will increase steadily on the Lethbridge Northern; the tax charge is low; the burden of debt is not excessive and the physical and economic environment of the project justifies the prediction of prosperous years, if reasonable willingness is shown to conform to proper methods of farm management. The charge of \$2.00 in addition to the water service charge, should be within the ability of the farmers to pay, after a preliminary period of freedom from payments. However, if the Government decides to reduce this annual charge, it will of course have the effect of making the farmers' burden so much lighter.

The water service charge should be kept as low as possible. One dollar or less should cover the cost. The water service charge should be required, without exception, unless it be in cases of distress, from all water users and owners of land on the project.

Such a reduction of the annual repayment charge is of course a distinct departure from the plan under which the bonds of the district were issued. The acceptance of this recommendation implies that the government continue its responsibility as guarantor of the district bonds, and that to make the

project a revenue producer, new contracts be entered into with the farmers for the payment of the water right and of the annual water service. Such a change, probably, can not be made without additional legislation.

The suggestion has been made that the Province pay for and own the project irrigation works, and then sell water to the farmers at a certain charge. This would mean that the farmer would never own his water right, and would have to purchase water perpetually from the Government. It would mean further that the Province would go into the business of selling irrigation water. Both propositions run counter to the best irrigation experience, and should not be considered seriously.

The modification in the method of repayment may be accomplished by any of the three methods, or by a combination of these methods:

First. The Province may voluntarily reduce the cost of the water right to a figure which, when amortized under the time limits of the present plan, 30 years, will amount to \$2.00 per year for the first 10 years, and more thereafter. The loss thus to be taken by the Province would be large, and not well distributed. The water right for the lands of the Lethbridge Northern is well worth \$55.00; though at the present moment, in the transition period, the value of these lands may seem indefinite. Irrigated lands, elsewhere, under similar climatic and market conditions, range somewhat above and below the lands of the Lethbridge Northern.

Second. The Province may find money for this purpose at a rate lower than 6 per cent. If the bonds could be purchased, and the whole construction cost refunded at a lower interest charge, the benefit to the farmer would be considerable. In this matter the Dominion Government could be of great assistance. The fate of the Lethbridge Northern will determine to a considerable degree, irrigation development in Canada. For that reason it has special national significance. The records indicate that at one time the Dominion Government expressed itself favorably relative to the securing of funds for this project at a lower rate than that available to the district.

Third. The annual water right for the present obligation could be reduced to \$2.00; after 10 years increased to more, by a longer amortization period, approximating 50 years. Should the interest charge remain as it is, the present bonds would not need to be disturbed, but the Province, which has guaranteed the bonds, would enter into a new repayment contract with the farmers. This would result in some loss to the Province, but fairly well distributed over the whole period of amortization; and much of the loss taken during the first part of the period

would be made up in the latter part of the period, when the bonds will have been paid. In other words, the Province would carry out in full the terms of the bond issue, unless indeed they could be refunded at a lower rate of interest, and then secure repayment by a smaller annual return, spread over a period much longer than that of the bond issue.

This method of relief carries with it the loss of interest during the two or three years of moratorium, and also the probable necessity of borrowing money from time to time to meet the terms of the bond issue. A long period will elapse before the farmers can repay their obligations. However, this plan requires smaller losses than any other workable plan proposed, and distributes the burden more equally. Besides, as the project develops, there will be an indirect income to the Province to reduce the probable loss as shown on the books.

A moratorium of one or two years at the beginning of farming operations; an annual acre water-right charge of about \$2.00 (exclusive of an annual water service charge of \$1.00) would be the two directly helpful methods of financial relief. Should such a plan go into operation, the moratorium relief should be made upon the basis of individual need, and the annual payment enforced, except upon recommendation of the Board charged with the duty of supervising the problems of the Lethbridge Northern.

Administration

The project farmers, the water users, should be expected to manage the internal affairs of the district. The Irrigation Council should undertake such work as lies outside the actual management of the irrigation system and should have general supervisory control, as indicated by law. The problem of the Lethbridge Northern is such that someone, representing the Provincial Government, should be in residence near the project. The best plan would be to form a separate Board to devote itself to this project until it is well on its feet. The members of this Board should be men who not only understand business methods, but who have some knowledge of irrigation matters and who have a sympathetic attitude towards the farmer. The commission should be given wide discretionary powers in reducing land holdings, effecting colonization and giving relief to individual applicants. All Lethbridge Northern matters should go through this Board. That is, one agency only should stand between the Government and the farmers of this project.

Summary of Recommendations

Some of the chief recommendations contained in this report may be summarized as follows:

1. A consistent continued campaign by local, Provincial and Dominion agencies to explain to the people the advantages of irrigation farming in Southern Alberta.

2. The formulation by the experimental and other agricultural agencies of a program of diversified and intensive agriculture, and of a set of rules for the proper use of water in agriculture.

3. Technical aid in the form of advisors who on the farm may give intimate counsel to the water users.

4. The support of all agencies that assist in the promotion of agriculture: The Alberta University, the Provincial Department of Agriculture, the Federal and Provincial Experiment Stations; the extension service, and the newspapers.

5. The establishment of proper marketing organizations, including movements to secure sugar factories, canneries, creameries and cheese factories, as will ensure the farmer markets for his crops.

6. Holdings on the project should be limited to 160 acres, and surplus lands should be placed at the disposal of the Province at a nominal price for colonization purposes. Relief should not be extended to those who will neither cultivate nor reduce their holdings.

7. Lands held by non-residents and not cultivated should be disposed of as recommended for surplus lands.

8. Tenants should be given options to buy the land that they cultivate at the reasonable prices agreed upon for the project. When that is done, tracts operated by tenants should have the privileges of home places.

9. Since 300 farmers are needed on the project at once, a united effort should be made through the existing local, corporate, Provincial and Dominion agencies to secure these colonists quickly, especially from among Canadian dry-farmers who are seeking new home places.

10. The necessary financial and technical help should be extended the colonists but only as needed.

11. Steps should be taken to provide settlers with such credit facilities as are necessary in the development of the project.

12. The present settlers should not be required to pay the water right charges for 1924, or if necessary for 1925 and 1926,

the loss to be absorbed by the Province. Such relief to be applied only on consideration of individual cases.

13. The water service charges for 1924 and every succeeding year to be collected from all water users. Such service charge should be kept below \$1.00 per acre, if possible.

14. All new colonists should be given the same privilege of two or three years moratorium, according to need.

15. The acre cost to present or new settlers should not exceed \$55.00 per acre, and the provision for joint liability should be abolished for this project.

16. The construction charge of the project should be so refunded as to make the annual water-right charge not more than \$2.00 per annum during the first ten years. This to be done by:

a. A sufficiently large absorption of the capital cost by the Province as loss, or

b. The reduction of the interest charge by securing cheaper money, or

c. The amortization of the capital cost over a period long enough, probably 50 years or more, to bring the annual charge down to \$2.00 per acre per annum for the first 10 years. A combination of "b" and "c" would undoubtedly give the most satisfactory result.

17. The water users should assume full responsibility for the internal management of the project.

18. The Province should undertake, in addition to general supervision, the colonization of the project. A Board, representing the Government, through which all forces should operate in behalf of the Lethbridge Northern should be created.

19. The present settlers should be given special attention to enable them to secure the profitable development of their home places, at the earliest moment.

Conclusion

A very thorough examination of the Lethbridge Northern has been made possible in a limited time by the excellent assistance rendered by all Dominion, Provincial and local authorities concerned with the work. I am especially grateful to Mr. L. C. Charlesworth, Chairman of the Irrigation Council, and his staff; Mr. W. H. Fairfield, Director of the Dominion Experimental Station at Lethbridge, and his staff; the Board and Manager of the Lethbridge Northern Irrigation District; the Lethbridge Northern farmers who gathered so willingly at Lethbridge to give me information; and to a host of private and official men and women who by personal kindnesses and giving important information gave valuable help. I am very grateful to you and to your Cabinet for your kind courtesies to me. I have appreciated especially the evident sincere desire on the part of the Government of Alberta to aid in the solution of the problem of the Lethbridge Northern. The knowledge and intelligence of Mr. G. R. Marnoch, and his courteous companionship have aided me greatly in the work.

The Lethbridge Northern presents some difficult problems, none new, which I have no doubt will be overcome, until great prosperity will cover the acres of the project.

Very respectfully,

(Signed.)

JOHN A. WIDTSOE.

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